# AGENDA

## Energy Efficiency and Renewable Energy Potential Study
## Advisory Committee Meeting

Date: Monday, November 1, 2004
Time: 3:00 pm – 5:00 pm
Location: Energy Center of Wisconsin
455 Science Drive, Suite 200
Madison, Wisconsin
(608) 238-4601

---

| Agenda Item | Duration | Time | Action |
|---|---|---|---|
| Introductions and Meeting Objectives/Agenda | 10 minutes | 3:00 – 3:10 | Identify additional agenda items if any |
| Overview of proposed methodology (Energy Center) | 20 minutes | 3:10 – 3:30 | |
| Review list of possible additions to scope (Energy Center and Meier Engineering) | 20 minutes | 3:30 – 3:50 | |
| Discussion of methodology and scope | 60 minutes | 3:50-4:50 | Identify and vote on: (1) changes to methodology, (2) additions/deletions to scope |
| Identify next steps | 10 minutes | 4:50 – 5:00 | |
| Adjourn | | 5:00 | |

ENERGY CENTER OF WISCONSIN

# Achievable Energy Efficiency and Renewable Energy Potential in Wisconsin

**Methodology Review Meeting**
**November 1, 2004**

YOUR PARTNERS IN ENERGY RESEARCH, EDUCATION & CONSULTING

# Meeting Purpose

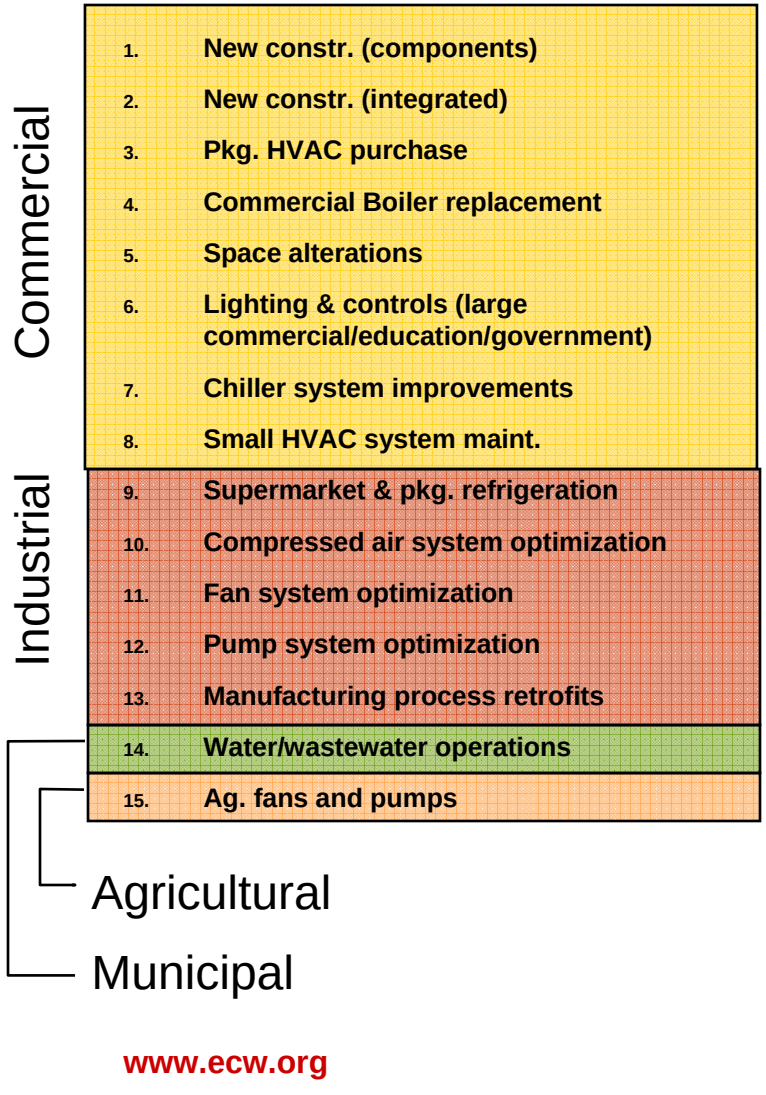
- **Review and/or modify methodology, scope, options, and budget**
- **Confirm or modify markets to include in study**
- **Plan next steps**
  - ***Stakeholders meetings***
  - ***Advisory Committee meetings***
  - ***Coordination with Focus on Energy market assessment***

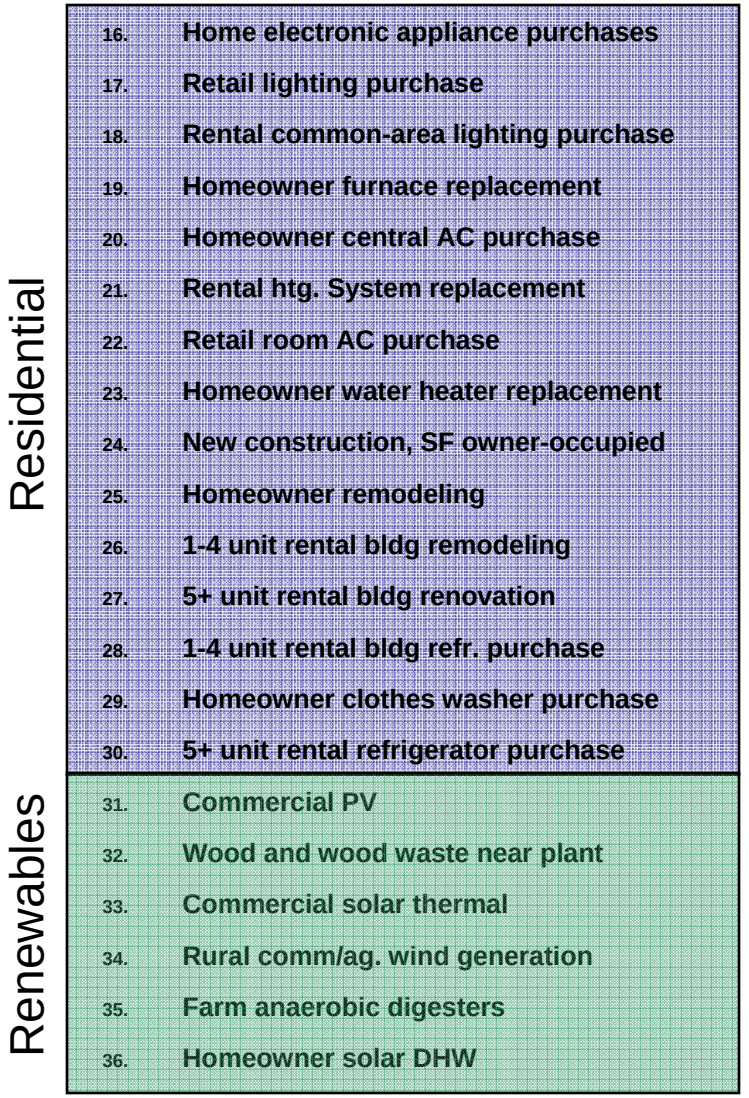
# Overview of Methodology

- Oriented around markets and program approaches
- Assessment of net, program-induced impacts
- Explicit analysis of uncertainty
- Output:  supply curves

# Scope --- Markets

ENERGY CENTER OF WISCONSIN



# Suggested by stakeholders, but not included in list of 36…

ENERGY CENTER OF WISCONSIN

| | | |
|---|---|---|
| Renewables | 1. | Residential PV |
| | 2. | Industrial wood combustion and co-firing |
| | 3. | Renewables in new homes |
| | 4. | Commercial solar space heating |
| Residential | 5. | Dehumidifiers in homes |
| | 6. | Central AC rehab. or early retirement |
| | 7. | Rental property water heater replacement / fuel switch |
| | 8. | Rental property laundry room equipment purchase |
| | 9. | 5+ unit rental new construction |
| | 10. | 5+ unit rental hot water measures |
| C&I | 11. | Lighting end-of-service replacement |
| | 12. | Industrial motors end-of-service replacement |

# Scope --- Geographic and time

- **Geographic:**
  - **Statewide**
  - **Optional disaggregation by utility**
- **Time:**
  - **Cumulative 5-year, starting in 2006**
    - **Extrapolation of Year 5 through Year 10**

**Program:** **Incentives for high-efficiency central AC**
Units air conditioners
Sector residential

**Per-Unit Impacts**

**Savings**

| | Relative to existing | | Relative to std. replacement | |
|---|---|---|---|---|
| | low | high | low | high |
| summer peak kW | 0.2 | 0.3 | 0.1 | 0.2 |
| annual kWh | 500 | 800 | 100 | 200 |
| annual therms | 0 | 0 | 0 | 0 |

| **Modes (% of participants)** | low | high |
|---|---|---|
| incremental upgrade | 90% | 95% |
| retrofit | 0% | 0% |
| accel. repl. to std. eff. | 0% | 0% |
| accel. repl. w/ eff. upgrade | 5% | 10% |

**Installation Cost**

| | |
|---|---|
| std. | $2,200 |
| efficient | $2,700 |

What savings will come from each upgraded unit?

**Life**

| | low | high |
|---|---|---|
| measure life (years) | 17 | 23 |
| accelerated repl. (years) | 1 | 5 |

How long will the impacts last?

**Participation model**

| | low | high |
|---|---|---|
| Annual market (units) | 90,000 | 110,000 |
| Maximum adoption rate: | 60% | 80% |
| Barriers: | low | moderate |
| Incentive (% of incr. cost): | 20% | 40% |

| | Participation Limit | |
|---|---|---|
| Yr | low | high |
| 1 | 5,000 | 10,000 |
| 2 | 10,000 | 25,000 |
| 3 | 25,000 | 50,000 |
| 4 | 50,000 | 90,000 |
| 5 | 90,000 | 110,000 |

How many people will participate in the program?

**Additional Market Effects (units)**

| | low | high |
|---|---|---|
| Year 1 | 0 | 500 |
| Year 2 | 0 | 1,000 |
| Year 3 | 0 | 2,000 |
| Year 4 | 0 | 4,000 |
| Year 5 | 0 | 8,000 |

What effects beyond immediate participants might the program have?

**Program Costs**

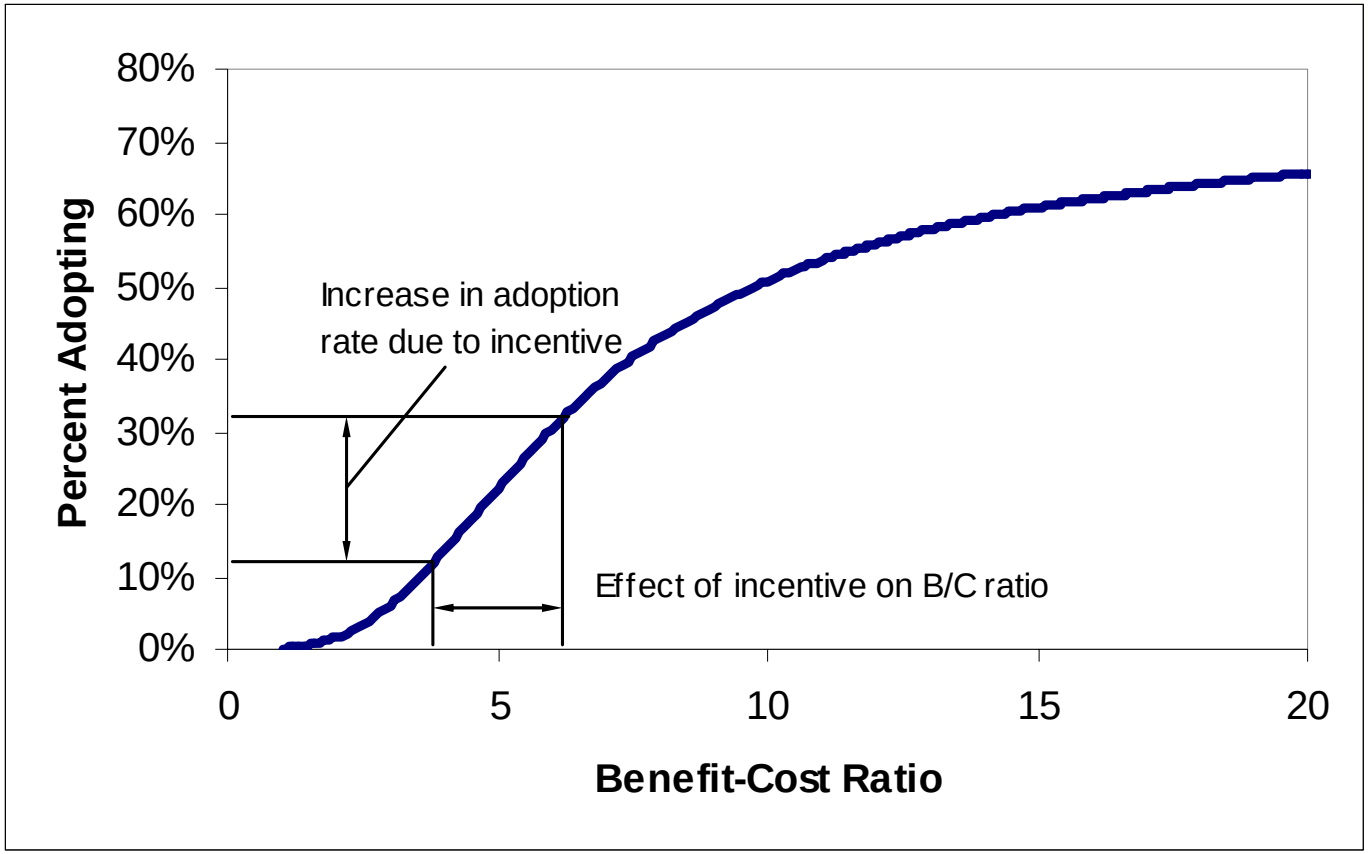
| | low | high |
|---|---|---|
| fixed, annual | $100,000 | $200,000 |
| per unit (non-incentive) | $25 | $50 |

How much will the program cost?

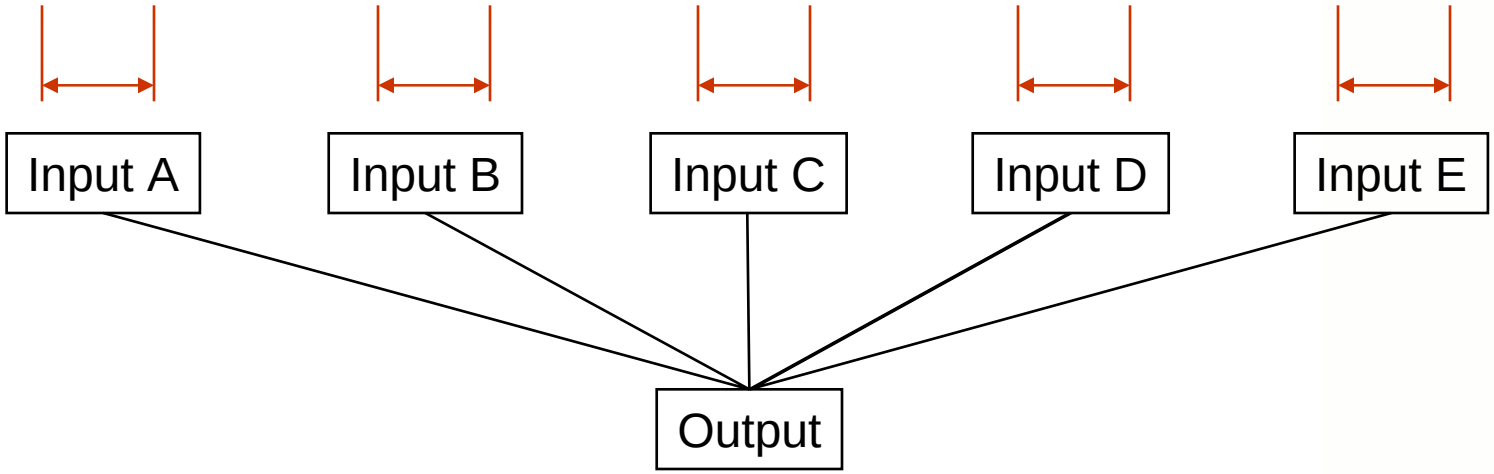
# Data Sources

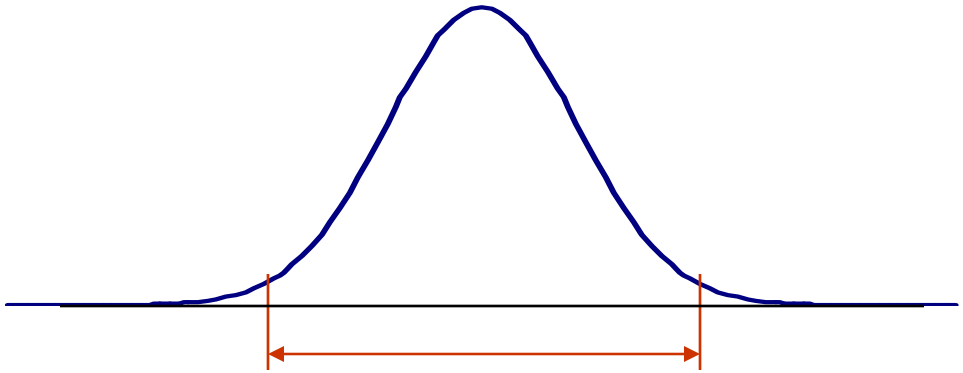
- Previous utility potential studies
- Focus market research and evaluations
- Energy Center research
- Series of open meetings to discuss markets and program approachs
- Other sources

# Model participation



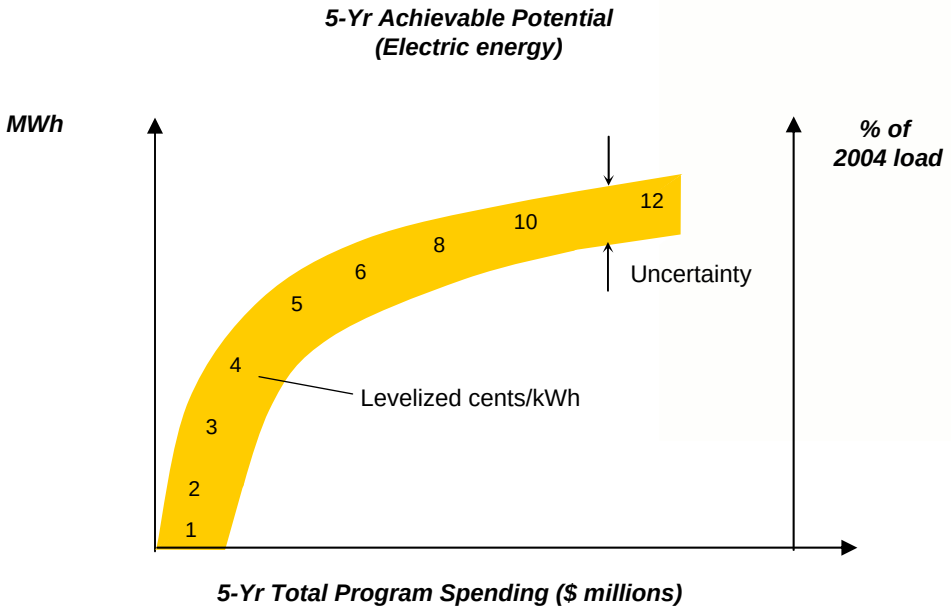
# Propagate Uncertainty



# Output: Supply Curves

- 2 optimizations
  - Individual resource
  - Overall benefit/cost



# Possible scope additions

1. **Disaggregate by utility service territory ($35,000)**
2. **Incorporate additional markets ($9,000 each; $3,500 to screen and rank)**
3. **Scenario optimization ($20,000)**
4. **Integrate with FIDO ($75,000+)**